

Manipulation Education Manual For Physical Therapist Professional Degree Programs

**Manipulation Education Committee
APTA Manipulation Task Force**

**Jointly sponsored by:
Education Section and Orthopaedic Section, American Physical Therapy Association
American Physical Therapy Association
American Academy of Orthopaedic Manual Physical Therapists**

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Dear Physical Therapist Educator,

As you know, the practice of physical therapy has been under attack on many fronts recently; one of the most aggressive has been directed toward the physical therapist's ability to provide manual therapy interventions including nonthrust and thrust mobilization/manipulations. APTA has been working with the American Academy of Orthopaedic Manual Physical Therapists (AAOMPT) and the Education and Orthopaedic Sections of APTA, to develop proactive initiatives to combat these attacks. In early 2003, strategies were developed to heighten awareness among academic and clinical faculty of legislative and regulatory threats to physical therapist use of manipulation in practice and in academic instruction. One of these strategies is to promote dialogue and resource sharing among physical therapy faculty regarding instruction, legislation, and regulation in the area of thrust manipulation. The Manipulation Education Manual (MEM) was developed to support the ongoing efforts in physical therapist education programs to provide appropriate, evidence-based instruction in thrust manipulation.

Educational preparation of physical therapists for the practice of manipulative therapy is often the focal point of arguments made in legislative and regulatory arenas by those attempting to limit our ability to participate in this area. Clearly, all forms of manual therapy, including all grades of mobilization and manipulation therapeutic movements, are within the scope of practice of physical therapy as is reflected in their inclusion in *A Normative Model of Physical Therapist Professional Education* (APTA, 2004), the evaluative criteria of the Commission on Accreditation in Physical Therapy Education (CAPTE), and the *Guide to Physical Therapist Practice* (APTA, 2003). The safety and effectiveness of all grades of mobilization/manipulation in physical therapist practice is well documented in the literature, particularly in the area of acute low back pain management. It is our shared goal that all professional educational programs provide strong education based on sound evidence. The evidence supporting physical therapist utilization of mobilization/ manipulation is well documented and underscores the necessity for our profession to be ready to clearly articulate and demonstrate its incorporation in our educational programs.

The enclosed *Manipulation Education Manual* provides a rich set of resource information that will assist you in enhancing your ongoing curriculum assessment and development in this area. We expect faculty members to find it a valuable resource in several regards. Academic coordinators of clinical education may wish to share materials in the manual with clinical instructors. Orthopedic faculty members will likely find the evidence review and curriculum resource information useful in course development and other aspects of instruction. Information in the manual will also be useful to faculty members who may be called to provide testimony or opinion if regulatory or legislative issues arise in your state. Should you have any questions, please do not hesitate to contact any member of the committee or appropriate staff members at APTA.

Sincerely,



Patricia M King, MA, PT, MTC
Chair, Manipulation Education Committee
APTA Manipulation Task Force



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Background

Purpose

The purpose of this section is to provide an overview of the activities and information that influenced and supported the development of this manual.

Contents

- Introduction
- Legislative and Regulatory Background
- Educational and Practice Standards
- Evidence Supporting Manipulation in Physical Therapist Education
- Bibliography

Introduction

Manipulation Education Committee

The Manipulation Education Committee was organized by the American Physical Therapy Association's (APTA) Manipulation Task Force in early 2003. The committee was charged to develop and initiate strategies to support and facilitate manipulation instruction in professional physical therapist education programs and to heighten awareness among academic and clinical faculty of legislative and regulatory issues associated with manipulation.

The American Academy of Orthopaedic Manual Physical Therapists (AAOMPT), the Orthopaedic Section, APTA, and the Education Section, APTA, each identified individuals to serve on the committee. The Orthopaedic Section and the AAOMPT provided financial support for the activities of the committee.

The committee first met in June 2003 and agreed to develop a resource packet for academic programs that provided a broad spectrum of information for faculty on the topic of manipulation instruction. In addition, the group identified key groups within the profession to address manipulation instruction such as the Academic Administrators Special Interest Group (AASIG) and the Clinical Education Consortium.

Manipulation Education Manual

The Manipulation Education Manual (MEM) and related activities of the Manipulation Education Committee and the Manipulation Task Force are in place to support the continued development of manipulation instruction in physical therapist education by assisting faculty in their ability to integrate the current best-evidence-based interventions related to manipulation into educational activities. The specific purpose of the MEM is to provide resource information to assist faculty in curriculum planning and academic and clinical teaching related to manipulation.

The Manipulation Education Committee developed the MEM based on the evidence-supported assumption that the inclusion of spinal and extremity mobilization/manipulation in the curriculum of professional physical therapist education programs is appropriate, safe, and ethical. The entire continuum of manipulative procedures, including thrust manipulations, is appropriate for inclusion in the curriculum of professional physical therapist education programs. Evidence for the safety and effectiveness of manipulation in physical therapist practice and education is clear and is reviewed in the latter part of this section of the manual. Compliance with current physical therapist education

program standards as described in *A Normative Model of Physical Therapist Professional Education*¹ and practice standards (*Guide to Physical Therapist Practice*)² make it clear that these interventions are appropriate curricular components of physical therapist education.

The committee utilized the following definitions of manual therapy and mobilization/manipulation from the current *Guide to Physical Therapist Practice* and endorses their use in professional education and practice.²

Mobilization/manipulation: A manual therapy technique comprising a continuum of skilled passive movements to the joints and/or related soft tissue that are applied at varying speeds and amplitudes, including a small-amplitude/ high- velocity therapeutic movement.

The terms manipulation and mobilization are used interchangeably in this document.³ The committee defined thrust manipulation as “high velocity, low amplitude therapeutic movements within or at end range of motion.” (Manipulation Education Committee, June 2003)

Legislative and Regulatory Background

Since 1993, at least 30 state chapters of APTA have had to defend the right of licensed physical therapists to practice manual therapy. The professional education preparation of physical therapists in the area of manipulation is frequently a focal point of arguments put forward by those attempting to remove our right to practice in this area. Therefore, to maintain manipulation as a vital part of the scope of physical therapist practice, physical therapists must be able to demonstrate to legislators that the entire continuum of manipulation procedures are taught as part of the professional education curriculum. Our educational standards as well as our practice guidelines clearly include manipulation. Faculty members are often called upon to provide testimony regarding the education and practice standards for manipulation in physical therapist professional education. One of the goals of distributing this manual is to heighten awareness among faculty of the integral role professional education often plays in legislative and regulatory challenges to manipulation practice.

Additional resources to assist faculty and others in preparing a defense of the position that manipulation is within the scope of physical therapist practice can be obtained by contacting the APTA State Governmental Affairs Department (ask for the *APTA Manipulation Action Packet*) and the APTA Orthopaedic Section (ask for *Manual Manipulative Therapy: A Compendium for Physical Therapists Regarding Practice and Legislative Issues*). Much of the information provided in the aforementioned resources may also be useful to faculty in the development of instructional materials. Regulatory issues that need to be considered when teaching manipulation in physical therapist professional education programs are addressed later in this manual in the Curriculum Resources section (page 11).

Educational and Practice Standards

Manual therapy, including mobilization/manipulation, has been a component of physical therapist practice since the inception of the profession.⁴ The *Guide to Physical Therapist Practice* makes it clear that manipulation is within the scope of physical therapy practice.² *A Normative Model of Physical Therapist Professional Education: Version 2004*¹ includes mobilization/manipulation as an intervention that should be taught in professional physical therapist education. In addition, manual therapy techniques (including manipulation) is a content area currently required by CAPTE to be included in professional physical therapist education programs.⁵ While survey data shows that mobilization/manipulation in some form has been included in professional physical therapist curricula since at least the 1970s and has steadily increased,⁶ a recent survey suggests that wide variation exists as to the how this content is integrated into physical therapist curricula.⁷

Evidence Supporting Manipulation in Physical Therapist Education Curriculum

In this era of medical cost cutting, reimbursement agencies and other interested parties are demanding evidence-based interventions. Manipulation is a safe and effective clinical intervention, and its safety and effectiveness are not dependent upon the profession of the practitioner applying it or the specific techniques used. Although manipulation has been practiced since the era of Hippocrates, only recently has external evidence in the form of randomized clinical trials supported the safety and efficacy of manipulation.⁸ Notably, much of the research supporting the use of spinal manipulation has been conducted by physical therapists.^{8,9}

Evidence Regarding Manipulation Effectiveness

The strongest and most voluminous support for the safe and effective use of manipulation is in the management of patients with acute low back pain (LBP). Spinal manipulation received the highest level of evidence awarded any intervention in the 1994 Agency for Health Care Policy and Research (AHCPR) Guidelines, which was the first clinical practice guideline to recommend the use of manipulation in the care of acute LBP.⁸ Since then, a number of other clinical practice guidelines (based on the results of randomized clinical trials and systematic reviews) have been published by various independent agencies with the same conclusion: spinal manipulation is a safe, effective, and recommended intervention in the management of LBP. A summary of the specific findings and recommendations of these can be found on the Web sites listed in the bibliography.^{3,10,11} Although the results of a recent systematic review were not as strong as the previously mentioned guidelines,¹² research continues and the findings of a recently concluded high-quality clinical trial promises to provide the strongest evidence yet for efficacy.¹³ There is also mounting evidence for the use of manipulation in the management of patients with pain in other spinal regions as well as the extremities,^{14,15,16} although the strength of conclusions about efficacy is not as strong as that for acute LBP at this time.

Epidemiological research shows that individuals with lumbo/pelvic, cervical, shoulder, and knee sprains/strains/conditions represent the largest segment of the patient population seeking outpatient physical therapy services.^{17,18,19,20} Research supports the utilization of manipulation for each of these diagnostic groups. The number of graduates expected to work in outpatient settings supports the inclusion of manipulation in the didactic and clinical education experiences of physical therapist students.

Evidence Regarding Manipulation Safety

There is considerable evidence for the safety and effectiveness of manipulation for the treatment of patients with acute low back pain. The risk of cauda equina syndrome from lumbar manipulation has been estimated to be on the order of 1 in 100 million manipulations,²¹ whereas the risks associated with nonsteroidal anti-inflammatory drugs, the most common competing drug therapy, is many orders of magnitude higher. Indeed, the risk of serious gastrointestinal bleeding from nonsteroidal anti-inflammatory drugs is 1-3 per 1000 and an estimated 76,000 hospitalizations and 7600 deaths (per year) may be attributable to these medications.^{9,22} While there is concern about the use of thrust techniques in the cervical spine, serious complications are still extremely rare (estimated to range from 1 per 400,000 to 3-6 per 10 million)^{23,24} and unlike the lumbar spine literature, a number of reports indicate that nonthrust cervical spine manipulation techniques may be just as effective.¹⁴ No reports of complications exist attributing harm from manipulation of the extremities. As stated by Gordon Waddell, "Orthodox medicine has a long way to go to reduce the rate of serious complications to the order of 1:0.2-1 million. What matters is the balance of the effectiveness versus risk, and that is strongly in favor of manipulation."²⁵

Unfortunately, having evidence that is available does not always result in its implementation. Despite the high number of patients with low-back pain managed by physical therapists in outpatient orthopedic settings, reports of practice patterns both in the US and abroad suggest that spinal manipulation is underutilized by physical therapists.^{26,27} Delitto accurately summarizes the current state of affairs regarding manipulation: “Over the past 10 years, for example, we have seen some very compelling evidence supporting manipulation for patients with acute LBP, yet manipulation is used by physical therapists in typical outpatient settings at a lower-than-expected rate. What seems to be incontrovertible is the fact that evidence exists to support the use of certain treatment procedures for patients with LBP and, like other health care professionals, physical therapists' behavior, in many cases does not comply with such guidelines.”²⁸

Summary

In summary, well-designed research has generated evidence supporting the safety and effectiveness of manipulation in physical therapist practice. Evidence is also available supporting the safety and effectiveness of manipulation instruction in the first phase of physical therapist professional education.²⁹ Physical therapist educational and practice standards support and clarify the inclusion of this intervention in professional education. Considering these facts, physical therapist students must be prepared with the knowledge and skills to practice manipulation if they are expected to practice in an evidence-based manner.

References

1. *A Normative Model of Physical Therapist Professional Education: Version 2004*. Alexandria, Va: American Physical Therapy Association; 2004.
2. *Guide to Physical Therapist Practice, Revised 2nd Ed*. Alexandria, Va: American Physical Therapy Association; 2003.
3. *DoD/VA Low Back Pain Guidelines*. Edited, DoD/VA, 1999. Available at: <http://www.qmo.amedd.army.mil/lbpfr.htm>.
4. Paris S. A history of manipulative therapy through the ages and up to the current controversy in the United States. *J Manual Manipulative Ther*. 2000;8(2):66-77.
5. Commission on Accreditation in Physical Therapy Education. Evaluative criteria for the accreditation of education programs for the preparation of physical therapists. Alexandria, Va: American Physical Therapy Association; 1998.
6. Bryan JM, McClune LD, Romito S, Stetts DM, Finstuen K. Spinal mobilization curricula in professional physical therapy education programs. *J Phys Ther Educ*, 1997;11:11-15.
7. Boissonnault W, Bryan JM, Fox K. Manipulation curricula in physical therapist professional degree programs. *J Orthop Sports Phys Ther*. 2004;34(4):171-181.
8. Bigos S et al. *Acute Low Back Problems in Adults*. Edited by the Agency for Health Care Policy and Research, Public Health Service. , Rockville, Md: US Department of Health and Human Services, 1994.
9. Tamblyn R et al., Unnecessary prescribing of NSAIDs and the management of NSAID-related gastropathy in medical practice. [see comments]. *Ann Int Med*. 1997;127(6):429-438.
10. *New Zealand Acute Low Back Pain Guide*. Edited, Wellington, NZ, ACC, and National Health Committee, 1997. Available at: http://www.nzgg.org.nz/library/gl_complete/backpain1/index.cfm#contents.
11. Waddell G, Feder G, McIntosh A., *Low Back Pain Evidence Review*. Edited, London, Royal College of General Practitioners, 1999. <http://www.rcgp.org.uk/rcgp/clinspec/guidelines/backpain/backpain5.asp#Guideline>.
12. Assendelft WJ, Morton SC, Yu EI, Suttrop MJ, Shekelle PG. Spinal manipulative therapy for low back pain. A meta-analysis of effectiveness relative to other therapies [summary for patients in *Ann Intern Med*. 2003 Jun 3;138(11):133; PMID: 12779310]. *Ann Int Med*. 2003;138(11):871-881.
13. Childs J, Fritz JM, Flynn TW, Irrgang JJ, Delitto A, Johnson KK, Majkowski G. Validation of a clinical prediction rule to identify patients likely to benefit from spinal manipulation: a randomized clinical trial. (In review).
14. Hoving JL, et al. Manual therapy, physical therapy, or continued care by a general practitioner for patients with neck pain. A randomized, controlled trial [summary for patients in *Ann Intern Med*. 2002 May 21;136(10):136; PMID: 12020157]. *Ann Int Med*. 2002;136(10):713-722.
15. Ingeborg BC, et al. Cost effectiveness of physiotherapy, manual therapy, and general practitioner care for neck pain: economic evaluation along a randomized controlled trial. *BMJ*. 2003;326.
16. Wainner RS, Flynn TW, Whitman JW. Spinal and extremity manipulation: the basic skill set for physical therapists; integrating technical application with the current best evidence. Fort Collins, Colo: Manipulations Inc; 2001. Available at: <http://hstat.nlm.nih.gov/hq/Hquest/screen/BySubject/s/59946>.
17. Boissonnault WG. Prevalence of comorbid conditions, surgeries, and medication use in a physical therapy outpatient population: a multicentered study. *J Orthop Sports Phys Ther*. 1999;29:506-519.

18. Di Fabio RP, Boissonnault W. Physical therapy and health-related outcomes for patients with common orthopaedic diagnoses. *J Orthop Sports Phys Ther.* 1998;27:219-230.
19. Jette AM, Davis KD. A comparison of hospital-based and private outpatient physical therapy practices. *Phys Ther.* 1991;71:366-375.
20. Jette AM, Smith K, Haley SM, Davis KD. Physical therapy episodes of care for patients with low back pain. *Phys Ther.* 1994;74:101-110.
21. Shekelle PG, Adams AH, Chassin MR, Hurwitz EL, Brook RH. Spinal manipulation for low-back pain. [see comments]. *Ann Int Med.* 1992;117(7):590-598.
22. Tannenbaum H, et al. An evidence-based approach to prescribing NSAIDs in musculoskeletal disease: a Canadian consensus. Canadian NSAID Consensus Participants. [see comments]. *CMAJ.* 1996;155(1):77-88.
23. Haldeman S, Kohlbeck FJ, McGregor M. Risk factors and precipitating neck movements causing vertebral artery dissection after cervical trauma and spinal manipulation. *Spine.* 1999;24(8):785-794.
24. Hurwitz EL, Aker PD, Adams AH, Meeker WC, Shekelle PG. Manipulation and mobilization of the cervical spine. A systematic review of the literature. *Spine.* 1996;21(15):1746-1760.
25. Waddell G. Evidence for manipulation is stronger than most orthodox medical treatments. *BMJ.* 1999;318:262.
26. Gracey JH, McDonough SM, Baxter GD. Physiotherapy management of low back pain: a survey of current practice in Northern Ireland. *Spine.* 2002;27(4):406-411.
27. Jette AM, Delitto A. Physical therapy treatment choices for musculoskeletal impairments. *Phys Ther.* 1997;77(2):145-154.
28. Delitto A. Clinicians and researchers who treat and study patients with low back pain: are you listening? *Phys Ther.* 1998;78(7):705-707.
29. Flynn T, Wainner R, Fritz J. Spinal manipulation in professional level physical therapist education: changing behaviors and monitoring outcomes in the management of low back pain—a case report. *Phys Ther.* In Review, 2003.

Other Resources

1. Cohen E, Triano JJ, McGregor M, Papakyriakou M. Biomechanical performance of spinal manipulation therapy by newly trained vs. practicing providers: does experience transfer to unfamiliar procedures? *J Manipulative Physiol Ther.* 1995;18:347-352.
2. Flynn TW. Move it and move on. *J Orthop and Sports Phys Ther.* 2002;32:192-193.

Curriculum Resources

Purpose

The purpose of this section is to provide information that academic administrators, academic faculty, and clinical faculty can use in the development of curricula, courses, and instructional activities related to manipulation.

An overview of legislative and regulatory issues relevant to manipulation instruction in both the academic and clinical education components of physical therapist professional education is presented at the beginning of this section. Recommended curricular content related to manipulation in didactic, practical, and clinical education components of educational programs is then presented. Sample instructional materials and an instructional resource list are also provided. Recommendations for faculty qualifications, opportunities for faculty development, and resources for identifying qualified faculty are included as well.

By design, thrust manipulation is the focus of the curricular content recommendations presented here consistent with the purpose of this manual. Manipulation is one of many evidence-based interventions physical therapists may select to utilize. The emphasis on manipulation in the curricular information in this manual does not imply that it is the sole intervention of choice for physical therapists, or that it should be used in practice in isolation from other interventions. Manipulation is an intervention with strong evidence for its efficacy, given the appropriate patient/client history and findings, however in physical therapist practice its utilization is integrated with other interventions. The best choices for instructional activities for physical therapists students are those that offer the students opportunity to develop clinical decision-making skills in the integration of manipulation with other interventions as well as to develop technical skill in the application of manipulative procedures.

Contents

- Legislative and Regulatory Considerations
- Curricular Content
- Sample Instructional and Evaluative Materials
- Course Syllabi Development
- Practical Instruction
- Instructional Resource List
- Faculty and Clinical Instructors

Legislative and Regulatory Considerations

Purpose

The purpose of this section is to provide an overview of current and ongoing legislative and regulatory considerations relevant to academic and clinical instruction in manipulation techniques in professional physical therapist degree programs.

Contents

- Scope of Practice Regulation
- Classroom and Clinical Physical Therapist Laboratory Instruction
- Clinical Internship Considerations
- Summary

The primary regulatory consideration in teaching manipulation in physical therapist professional education programs is language related to the use of manipulation by physical therapists in state physical therapy practice acts and in physical therapist licensing board's rules and regulations. Other

standards to be considered are CAPTE's evaluative criteria,¹ the accepted physical therapy scope of practice as defined in APTA documents including the *Guide to Physical Therapist Practice*² and *A Normative Model of Physical Therapist Professional Education*,³ and academic freedom rights of university faculty.

Scope of State Practice Regulation

The physical therapist scope of practice is regulated by each state legislature through the passage and regulation of the physical therapy state practice act. Typically, each state practice act includes language that requires the individuals licensed under the physical therapy practice act to be of good moral character, to have graduated from a program accredited by a nationally recognized agency or an agency approved by the state board, and to pass the physical therapy licensure examination.

Classroom and Clinical Physical Therapist Laboratory Instruction

The focus of classroom and clinical physical therapy laboratory instruction is in accordance with meeting CAPTE's evaluative criteria¹ that includes teaching the scope of physical therapy practice as described in the *Guide, Part I: A Description of Patient/Client Management*. The terminology used and defined in the *Guide*² is taught and used in physical therapist professional education programs. Regarding manual therapy, this includes nonthrust and thrust mobilization/manipulation interventions.

State and federal laws of free speech and academic freedom also protect academic faculty members. Consultation with university legal counsel regarding the rights and privileges of university faculty is advisable if there are any concerns regarding freedom to include certain aspects of the scope of physical therapist practice in the professional curriculum due to restrictive language in state practice laws and/or regulations.

Clinical Internship Considerations

Clinical internship experiences of student physical therapists are under the direct supervision of licensed physical therapists that serve as clinical instructors (CIs). CIs and students must adhere to the rules and regulations of the state physical therapy practice act regarding both scope of practice and use of accepted terminology to describe that practice in the state where they practice. APTA legal counsel is available to APTA members to assist in interpretation of the practice acts if there is a lack of clarity regarding the scope of physical therapist practice in the state. Additional APTA resources that address questions regarding manipulation regulatory and legislative issues include the APTA *Manipulation Action Packet*, which can be obtained by contacting APTA Governmental Affairs Department, and the Orthopaedic Section's *Manual Manipulative Therapy: A Compendium for Physical Therapists Regarding Practice and Legislative Issues*, that can be obtained by contacting the APTA Orthopaedic Section office (contact information for both the APTA Government Affairs Department and the Orthopaedic Section are provided in the Contact List at the end of this manual).

The terminology used to describe manual therapy and mobilization/manipulation should be standardized in physical therapist professional education to comply with the *Guide*² and other APTA documents. However, some state practice acts limit the use of certain terms to describe manual therapy procedures. It is the responsibility of the CI and student to be aware of and comply with state practice acts in the clinical internship experience. Academic faculty should also prepare students for these issues prior to commencing clinical internships.

Summary

Given CAPTE's¹ evaluative criteria and the *Guide*'s² description of physical therapist practice, it is reasonable to expect that the continuum of manual therapy procedures, including nonthrust and thrust

mobilization/manipulation, be taught in all physical therapist professional degree education programs; however, faculty must consider any restrictions placed on academic and/or clinical instruction by existing state law. Academic freedom and freedom of speech rights also protect academic faculty to meet CAPTE evaluative criteria and Guide standards in curriculum development and level of instruction. Clinical instructors and student physical therapists must comply with state practice acts regarding both scope of practice and accepted terminology during instructional activities conducted at clinical internship sites. Further clarification of regulatory issues can be sought by consulting with legal counsel.

References

1. Commission on Accreditation in Physical Therapy Education. *Evaluative Criteria for Accreditation of Education Programs for the Preparation of Physical Therapists*. Alexandria, Va., American Physical Therapy Association, 1998.
2. *Guide to Physical Therapist Practice, Rev 2nd Ed*. Alexandria, Va: American Physical Therapy Association; 2003.
3. *A Normative Model of Physical Therapist Professional Education: Version 2004*. Alexandria, Va: American Physical Therapy Association; 2004.

Curricular Content

Purpose

The purpose of this section is to outline the essential elements of a curriculum in manipulation instruction appropriate for physical therapist professional degree programs. Didactic content recommended includes:

- 1) The history of manipulation; and
- 2) Theory and principles of manipulation.

Practical instruction in manipulation techniques is a necessary component of a curriculum in manipulation instruction for physical therapists, as is practice of manipulation techniques during clinical education experiences. Guiding commentary related to both practical instruction and clinical education are presented in this section.

Contents

- History of Manipulation
- Manipulation Theory and Principles
- Practical Instruction–Manipulation Techniques
- Clinical Education

History of Manipulation

The history associated with manipulation as an intervention is important foundational information for physical therapist students. An understanding of the origins of: (1) the intervention itself, (2) the various professionals who utilize the intervention, and their philosophical approach, and (3) the relevant definitions and terminology, will help prepare the student to utilize this intervention appropriately. In addition, this knowledge base may help in the understanding of relevant legislative and regulatory issues, again promoting appropriate use of the intervention.

For example, understanding that there is documentation of utilization of manipulation techniques back to the time of Hippocrates should bring to question the claim of any current health profession “owning” or inventing this intervention. Equally important is the knowledge that manipulation has been a part of physical therapist practice since the 1920s and 1930s. The Instructional Resource List contains journal articles and textbooks, authored by physical therapists and physicians, where this association has been made. Information on how to acquire the *Compendium*¹ offered by the Orthopaedic Section, APTA, which includes information outlining the history of manipulation in detail, is also found in the Instructional Resource List.

A number of professionals, besides physical therapists, provide manipulation as an intervention for their patient populations, including chiropractic, osteopathic, and allopathic practitioners. Understanding the historical and current role manipulation plays in their approach to patient care, and the utilized terminology will facilitate interprofessional communication and promote a better understanding of the published literature authored by non-physical therapists. This knowledge will also lead to an appreciation as to why there have been, and continue to be, legislative battles over this issue.

Lastly, appropriate use of manipulation-related terminology is important for communicating with those within our profession, and also in some states could make the difference between practicing within state regulatory guidelines versus practicing outside the scope of physical therapist practice. For example, the Wisconsin State Physical Therapy Act states: “A physical therapist may not claim that any manipulation service they provide is in any manner a chiropractic adjustment...” Understanding the evolution of the definitions and terminology will give one an appreciation of the influence politics has played historically as physical therapists have struggled to employ an intervention that has been a part of our practice for decades. This manual contains the current recommended terminology related to manipulation and physical therapist practice.

An awareness of the physical therapy professional organizations whose purpose is to promote safe and effective use of manual therapy techniques, including manipulation, is important so students will know what resources are available beyond their academic experience. These organizations include the International Federation of Orthopaedic Manipulative Therapy (IFOMT), the Orthopaedic Section, APTA, and the American Academy of Orthopedic Manual Physical Therapists (AAOMPT). IFOMT, a subgroup of the World Confederation of Physical Therapists (WCPT), was formed in 1966 and meets every 4 years in locations around the world. The Orthopaedic Section, APTA, formed in 1974, has a purpose and function that is broader than just manual therapy issues, but has been a strong proponent of physical therapists providing manual therapy interventions including manipulation since its inception. Lastly, AAOMPT, formed in 1991, provides leadership regarding the professional development of physical therapists and this intervention, and has linked with APTA and the Orthopaedic Section to develop educational and legislative resources and guidelines for the physical therapy profession. Finally, Dr Stanley Paris has published a very informative historical overview of the history of manipulation. This recommended resource was published in the *Journal of Manual and Manipulative Therapy*² and provides extensive details regarding all of the issues noted above.

Example Objectives

At the completion of this content, the student will be able to:

- Describe the origins of manipulation beginning with Hippocrates leading up to the emergence of the osteopathic, chiropractic, and physical therapy professions.
- Compare and contrast the osteopathic, chiropractic, and physical therapy professions in terms of:
 Underlying patient care philosophy and how this influences the use of manipulation.
 Terminology, unique and similar to the three professions.
- Select at least three nonphysical therapists and three physical therapists and describe their contributions to the evolution of manipulation and the physical therapy profession.
- Interpret his or her state practice act for language specific to the use of manipulation by physical therapists.

References

1. *Manual Manipulative Therapy: A Compendium for Physical Therapists Regarding Practice and Legislative Issues.* LaCrosse, WI: Orthopaedic Section, APTA; 2001.
2. Paris SV. A history of manipulative history through the ages and up to the current controversy in the United States. *J Manual and Manipulative Ther.* 2000;8(2):66-77.

Manipulation Theory and Principles

Theory and principles of manipulation effects, effectiveness, and technical application are described and examined in a variety of texts and articles. The current best evidence regarding effectiveness and safety of thrust and nonthrust manipulations is reviewed in the Background section of this manual (page 7). Courses that include manipulation instruction should include assignments requiring students to engage in searching for the current best evidence supporting or refuting manipulation effectiveness and examining the theoretical rationale for its utilization in the management of the disorders presented. Students should meet learning objectives related to a command of the theory and principles of manipulation prior to technical practice.

Definitions

Language associated with manipulation is often confusing as definitions vary among sources and practitioners. An overview of the various connotations of manipulation language should be addressed in the curriculum and students should be aware of the most current sources utilized in physical therapy. The *Guide to Physical Therapist Practice* is the preferred reference for definitions related to clinical examination and interventions, including manual therapy. The Guide definitions, as well as most state laws and regulations, do not distinguish among subtypes of manipulations. Some clinicians and some research will distinguish between thrust and nonthrust manipulations, which may be defined in the following way:

Thrust: High velocity, low amplitude therapeutic movement within or at end range of motion.

Nonthrust: Those manipulations that do not involve thrust.

Definitions of terms related to the utilization of manipulation are also found in the glossary of the *Orthopedic Manual Physical Therapy Description of Advanced Clinical Practice (OMPT DACP)* published by the AAOMPT in 1998. The *OMPT DACP* is available through the AAOMPT office (see Contact List at the end of the manual).

Safety

Specific safety precautions associated with manipulation in general and manipulation in specific regions such as the cervical spine are, of course, a necessary component of instruction. Students should be competent in making decisions regarding when to utilize manipulation, when to not, and when to refer to a physician or other practitioner based on known signs of safety or other medical concerns. Contraindications associated with the utilization of joint manipulation to date have been based primarily on opinion. In general, manual therapy procedures are contraindicated when motion into a segmental region is contraindicated by the patient examination data collected.

Example Objectives

At the completion of this content, the student will be able to:

- Describe the current evidence-based theories supporting the use of manual therapy interventions.
- State the current accepted definitions associated with manual therapy interventions found in the *Guide to Physical Therapist Practice* (APTA, 2003).
- Describe risk factors associated with an adverse outcome secondary to the application of manual therapy interventions.
- Identify the clinical symptoms and signs suggesting that manual therapy intervention is contraindicated.

Practical Instruction–Manipulation Techniques

Practical instruction and examination of competency are necessary components of nonthrust and thrust mobilization/manipulation instruction in professional physical therapist education programs. Based on the available literature, instruction should particularly emphasize extremity, thoracic, and lumbo-pelvic techniques across the continuum of mobilization/manipulation techniques. Special emphasis should be given during any instruction in cervical manipulation due to the incidences of vascular compromise associated with thrust techniques in this region. Foremost, amongst the accidents that may occur is stroke from injury to the vertebral arteries.

Examples of practical instructional materials and techniques most commonly selected for instruction are provided in the Sample Instructional and Evaluative Materials that follow in this manual (page 21). Sample criteria sheets that can be utilized during practical examination are also found in that section.

Faculty/ Student Ratio Recommendations

CAPTE requires that the core faculty “*is sufficient in number and possesses the expertise to assure instructional design, content delivery and curricular evaluation.*” Furthermore, CAPTE states that “*the complexity of the material being taught, the teaching methodology being used, the number of students per class, and the experience of the core faculty members must be considered when planning for a sufficient number of core faculty.*” The Manipulation Education Committee recommends a maximum of 15:1 student to faculty ratio, with a preferred ratio of 10:1 during practical instruction in manipulation.

Sample Learning Objectives for Practical Instruction (including related clinical decision making)

The student will:

1. Demonstrate competence in both performing and interpreting examination procedures appropriate for physical therapy management and prevention of musculoskeletal disorders of the extremities and spine including manual therapy examination procedures.
2. Demonstrate competence in both the technical application and in the interpretation of response to physical therapy interventions utilized in the management of musculoskeletal disorders of the extremities and spine, including nonthrust and thrust mobilization/manipulation interventions.

Clinical Education

Role of Clinical Faculty

Clinical faculty (CIs) are a contracted extension of the academic institution and therefore are expected to provide opportunities for the student to develop skills across the manual therapy spectrum, as allowed and appropriate for the patient population at the facility, the skills of the CI, and state regulations. Adequate instruction from a properly qualified CI is a continuum of the academic program’s instruction and is essential in students’ development of skill in the utilization of all types of manipulation techniques. Given the appropriate academic background and guided practice, students can be expected to perform manipulations safely and effectively.

Regulatory Restrictions

State laws related to the practice of mobilizations/manipulations vary including a few states restricting physical therapists from utilizing spinal manipulation interventions. Indiana, North Carolina, and Puerto Rico preclude physical therapists from performing manipulation of the spine, unless prescribed by a physician. Washington State prohibits spinal manipulations or advertisements

of manipulations by a physical therapist with or without a physician's referral. Florida has adopted a statute stating that physical therapy practitioners are not authorized to practice chiropractic medicine, including specific spinal manipulation. In Wisconsin, a physical therapist may not claim that any manipulation service is in any manner a chiropractic adjustment that is employed to correct a spinal subluxation. Arkansas, Iowa, Minnesota, Nevada, Utah, and Washington also have some restriction on the practice specified in law. (Virginia Board of Medicine, Department of Health Professions, Study of Spinal Manipulation, www.dhp.state.va.us/PhysicalTherapy/). Information presented here reflects the status of state laws at the time of publication; State regulatory agencies should be contacted for accurate state by state information.

If the state has specific language related to the use of manipulation, the student should be asked by the CI to read the relevant language. To access state regulations, go to the Federation of State Boards of Physical Therapy Web site (www.fsbpt.org) and click on the link "Directory of State Boards." Then select the state for which you want to read the state practice act for specific restrictions or regulations. It may be easiest to contact someone in the state who is familiar with the law for physical therapists. Contact information is on each state Web site.

Clinical Performance Objectives

The following is a suggested progression for instruction in manual therapy techniques for the physical therapist student. As in all areas of physical therapist practice, CI's are encouraged to seek continuing education in manual therapy to attain current information and skill that supports their ability to safely, effectively, and efficiently assist the physical therapist student in this area of skill development. The CCCE and the CI should identify the manual therapy skills taught to the student through information provided by the academic institution. The *Normative Model* provides an example of Terminal Behavioral Objectives that are appropriate for the manual therapy education (cognitive, psychomotor) the student received in the curriculum:

At the completion of the content, the student will be able to select, perform specific tests, and obtain measures for joint integrity and mobility, range of motion, pain, and posture (*Normative Model Version 2004*, pages 46, 140-142), which may include those that characterize or quantify:

- Joint integrity and mobility.
- Joint play movements, including end feel (all joints of the axial and appendicular skeletal system).
- Functional ROM.
- Joint active and passive movement.
- Muscle length, soft tissue extensibility, and flexibility.
- Pain, soreness, and nociception.
- Pain in specific body parts.
- Postural alignment and position (static and dynamic), including symmetry and deviation from midline.
- Specific body parts.

At the completion of the content, the student will be able to select and safely perform interventions including manual therapy techniques (*Normative Model*, pp. 60, 146) that may include those that characterize or quantify:

- Manual traction.
- Massage:
 - Connective tissue
 - Therapeutic massage
- Mobilization/manipulation:
 - Soft tissue (thrust and nonthrust)
 - Spinal and peripheral joints (thrust and nonthrust)
- Passive range of motion.

Clinical Instruction and Documentation of Student Performance

The CI should use progressive questioning of the student on the theory of, indications of, and contraindications of use of manipulations. Once the CI is comfortable with the cognitive abilities of the student, the CI should provide opportunities to practice manipulations in safe and progressive fashion, and offer feedback on the skill performance and critical-thinking process.

There are at least nine performance criteria in the Physical Therapist Clinical Performance Instrument (CPI) that give guidance to the CI for the purposes of evaluating the manual therapy skills of the student across all domains (cognitive, psychomotor, affective). The list below identifies the criteria that can be used to examine and evaluate the manual therapy skills of the student. These are the same criteria that are used to evaluate the clinical performance of the student in all areas of the clinical experience.

- Safety (#1)
- Legal practice standards (#5)
- Critical inquiry and the use of logic and evidence in practice (#9)
- Performance of the examination (#11)
- Evaluation of findings (includes diagnosis and prognosis) (#12)
- Design of the plan of care (#13)
- Performance of interventions (#14)
- Education of the patient/client and others (#15)
- Self-directed plan for learning manual therapy (#23)

It is critical that CIs provide documentation to support the skill (cognitive, psychomotor) level of the student. The *Normative Model* provides examples of Instructional Objectives that are appropriate for the clinical education component.

- Perform an examination of a patient/client within a prescribed amount of time.
- Conduct a patient/client, family, or caregiver interview that contributes to the formulation of the differential diagnosis.
- Perform tests and measures efficiently.
- Provide a rationale for the choice of tests and measures selected.
- Collect information from laboratory and diagnostic tests as part of the examination.
- Collect patient/client pharmacological history as part of the examination.
- Ensure the safety of the patient/client throughout the clinical intervention.
- Assess patient/client response to the intervention and modify accordingly.
- Provide mobilization/manipulation intervention, including thrust, for a patient/client with adhesive capsulitis (can substitute varying appropriate diagnoses).

Additional samples of appropriate Terminal Behavioral Objectives are provided below.

The student will identify physical therapy interventions for a patient/client who presents with a spinal or extremity disorder by:

- a. Explaining the theory of manipulation including:
 - i. Defining the terms mobilization, manipulation, nonthrust (grades I-IV), and thrust.
 - ii. Explaining the mechanical, neurophysiological, psychological, and chemical effects of manipulation.
- b. Discussing indications for various types of manipulative treatments for the extremities and spine including, but not limited to, thrust.
- c. Discussing absolute/relative contraindications and precautions for manipulative techniques including, but not limited to, thrust.

- d. Distinguishing whether thrust or nonthrust techniques should be utilized, given a patient's case.
- e. Demonstrating safe and effective manipulation techniques for the extremities, cervical, thoracic, lumbar, and sacroiliac dysfunctions.
- f. Interpreting responses to treatment and making appropriate recommendations for modification.

Sample Instructional and Evaluative Materials

Purpose

- Sample instructional materials are provided to assist faculty members during design and modification of curricula and courses.
- This section is not intended to serve as a model curriculum nor does the Manipulation Education Committee endorse any particular curricular model or method.
- Sample materials are intended as resources for faculty to utilize as appropriate and needed within an individual institution's curricular philosophy.
- A bibliography is provided in the Instructional Resource List (page 40).

Contents

- Course Syllabi Development
 - Sample Course Description
 - Sample Course Objectives
 - Organizing and Sequencing Course Content
- Sample Course Syllabi
 - Sample Syllabus 1: Spine Course
 - Sample Syllabus 2: Extremity Course
- Practical Instruction
 - Sample Laboratory Handouts
 - Sample Practical Examinations: Instructional Resource List

Course Syllabi Development

Sample Course Description

Recommendation:

The courses that integrate manipulation should include a statement clearly identifying that the course includes examination and intervention techniques including thrust and nonthrust manipulations.

Example:

This course will focus on the principles and techniques necessary to perform a competent physical therapy examination and intervention program for common musculoskeletal dysfunctions of the upper extremities, lower extremities, and spine, including thrust and nonthrust manipulations.

Sample Course Objectives

Recommendation:

Address both thrust and nonthrust manipulations in course objectives as well in individual lecture and lab objectives.

Examples:

1. The student will perform a competent examination including interviewing the client to assess the history of the injury/pathology, interviewing the client to assess pain, and outlining the sequence of tests and measures used in a spinal objective examination (structural assessment, active motion assessment, spinal screening, palpation for tissue condition, palpation for bony landmark position, palpation for passive intervertebral motion (PIVM), accessory motion testing, upper quarter and/or lower quarter screening, special tests, neurological testing, and gait).

2. The student will perform a physical therapy evaluation for a patient who presents with a spinal disorder by:
 - a. Determining an appropriate physical therapy diagnosis based on examination findings.
 - b. Determining an appropriate prognosis based on examination findings.
 - c. Identifying a plan of care that includes specific interventions, problem list, short-term goals (STG), and long-term goals (LTG based on examination findings).
 - d. Documenting the evaluation for a given patient problem.
3. The student will identify physical therapy interventions for a patient who presents with a spinal disorder by:
 - a. Explaining the theory of manipulation including
 - i. Defining the terms mobilization, manipulation, nonthrust (grades I-IV), and thrust.
 - ii. The mechanical, neurophysiological, psychological, and chemical effects of manipulation.
 - b. Discussing indications for various types of manipulative treatments for the extremities and spine including, but not limited to, thrust.
 - c. Discussing absolute/relative contraindications and precautions for manipulative techniques including, but not limited to, thrust.
 - d. Distinguishing whether thrust or nonthrust techniques should be utilized, given a patient case.
 - e. Demonstrating safe and effective manipulation techniques for the extremities, cervical, thoracic, lumbar, and sacroiliac dysfunctions; interpreting response to treatment; and make appropriate recommendations for modification.

Organizing and Sequencing Course Content

Recommendation:

As in other areas of physical therapy practice, it is recommended to provide instruction in examination principles prior to instruction in intervention application. Examination principles of manual therapy and manipulation precede instruction in the technical skill of manipulation in the recommended sequence (see example below).

Example:

Content Sequence

Principles of Orthopedic Examination
 Introduction to Manual Therapy
 Spinal Manipulation—History, theory, evidence, legislative issues
 Classification of Techniques
 Contraindications and Precautions
 Examination of the Patient
 Exercise for Developing Technical Skill
 Upper and/or lower extremity lecture and lab material, with guided practice for developing technical skill
 Spine lecture and lab material
 Written and practical examinations—midterm and final

Sample Course Syllabus #1: Spine Course

Dates: 2nd Semester

Professor:

Location:

Times: Lecture, laboratories, student presentations, and patient contacts are scheduled over approximately 72 classroom and laboratory periods. The tentative schedule is on page X of the syllabus. When possible, additional instructors will be present for the laboratory sessions.

Description: This course consists of a combination of lectures, demonstrations, required readings with discussion, and small group laboratory sessions. An emphasis of the course will be on applying evidenced-based practice in all areas of spinal management. Where little evidence exists, a pragmatic approach integrating basic principles of biomechanics and pathokinesiology will be used. A minimum of one-half of the course will be devoted to carefully monitored laboratory palpation, examination, and intervention sessions. An introduction to the biomechanics, kinesiology, and specific terminology of spinal movement will be provided and you will be expected to have a solid grasp of these components. An integrated model of physical therapy examination and evaluation of spinal disorders will be presented. A physical therapy management approach of manual therapy (muscle energy techniques, mobilization, and manipulation) combined with patient education and exercise will build upon the models previously presented in your physical agents and the lower extremity courses. This second semester will place greater emphasis on spinal examination and diagnosis processes. When you return after your first full-time clinical experience, we will continue with more advanced manipulative intervention options as part of your physical rehabilitation course.

Objectives:

At the completion of this course, the student will be able to:

1. Define and discuss the selected terms related to spinal disorders.
2. Discuss the history of LBP in this country using the terminology of impairment, functional limitation, and disability.
3. Define illness behavior.
4. Compare and contrast LB pain and LB disability.
5. List treatment options based on clinical trials that have been found to be effective in the management of LBP.
6. List red flags used to detect serious spinal pathology.
7. Discuss the potential causes, signs, and symptoms of spinal nonmusculoskeletal disorders that require referral to other health care professionals.
 - Ankylosing Spondylitis
 - Reiter's Syndrome Rheumatoid Arthritis
 - Diffuse Idiopathic Skeletal Hyperostosis (DISH)
 - Fibrositis (Fibromyalgia) Spondylolysis
 - Spondylolisthesis
 - Spinal Stenosis HNP
 - Herpes Zoster
 - Sacroiliac Lipoma Degenerative Disk Disease
 - Myelopathy
 - Radiculopathy
8. Discuss the structure and function of the intervertebral disc.
9. Describe the intervertebral and apophyseal articulations of the spine.
10. Discuss each region of the spine in terms of normal functional motion.
11. Discuss biomechanics of the spine as a rationale for instruction in proper lifting techniques and postural education.
12. Given a patient with complaints of spinal pain, perform a thorough history and examination. Determine a physical therapy diagnosis and prognosis. Design and document correctly a comprehensive physical therapy intervention strategy. Identify factors that may influence compliance (biological, social, cognitive, cultural, or psychological).
13. Given a history and examination findings of an individual with low back problems, correctly classify the patient based on a treatment-based classification model.
14. Perform correctly selected manual therapy techniques (to include muscle energy technique and nonthrust and thrust mobilization/manipulation) to the spine.
15. Based on the *Guide to Physical Therapist Practice* (APTA; 2003) discuss primary prevention and risk factor identification in Preferred Practice Patterns for Impaired Posture and Impaired

Joint Mobility, Motor Function, Muscle Performance, Range of Motion, and Reflex Integrity Associated with Spinal Disorders.

16. Discuss the flexion and/or extension exercise principles to include the plausibility of the anatomical/mechanical rationale for use, the indications and contraindications for use, and list the exercises involved.
17. Given a patient, real or simulated, who is a candidate for spinal exercises, instruct and monitor performance.
18. Describe/demonstrate selected exercise routines for the spine and state your rationale for using each specific exercise.
19. Discuss the therapeutic application of cervical and lumbar spinal traction. List the conditions for which spinal traction is indicated and describe the therapeutic benefit. Discuss alternate ways to unload the spine.
20. State the reason(s) where spinal traction is contraindicated in specific pathologies.
21. Demonstrate and/or correctly set up a simulated patient on cervical and/or lumbar traction.
22. Discuss static and dynamic posture.
23. Describe "standing posture" in the sagittal, horizontal, and frontal (anterior and posterior views) planes in reference to a plumb line.
24. Perform a postural evaluation on a subject/patient, recognize deviations, and state possible causes for these deviations.
25. Discuss scoliosis. Differentiate between structural and nonstructural scoliosis.
26. Describe the model of neutral and nonneutral mechanical coupling (rotation and sidebending) and contrast the different spinal regions.
27. Discuss segmental dysfunction in terms of both positional and motion restriction terminology.
28. Define mobilization, muscle energy technique, and high-velocity thrust (manipulation) technique.
29. Given a body chart with referred pain of potential radicular origin, state the root level of involvement.
30. State the innervation of typical muscles tested (manual muscle test [MMT] and reflex) on the neuromotor screen.
31. Given the name of a special test, state the purpose, describe the test and the reliability, validity, and diagnostic accuracy of the test.

Evidence-Based Review: Critical Appraisal Assignments

You are required to coherently present diagnostic methods and intervention strategies or techniques for patients with spinal disorders. These disorders may be described via a classic disease or tissue model; however, you need to draw the link to physical therapy in terms of an impairment or the disablement model and physical therapy treatment. *In other words, what are the "key impairments" that result from these disorders, and how can you, as a physical therapist, address these.* Think of this as providing a targeted mini in-service on the assigned topic. It should be concise and targeted to your audience of fellow therapists. At least 5 minutes of your oral presentation should emphasize why these topics are relevant to physical therapy. Evidence for treatment approaches should be documented via clinical trials or other clinical research if available; if not, it should be stated why this approach is suggested.

Assignments

Select a topic from the following list. You will be working in groups of 2-3 for these assignments.

1. Pregnancy and LBP
2. Adverse Neurodynamics (LBP)
3. Nonsurgical Management of Scoliosis
4. Centralization Phenomenon
5. Lumbar Spinal Disectomy/Laminectomy
6. Cervical Spine Instability

Written assignment: Working in groups of three, write a 4-6 page typed paper. The style of the paper should be in any format you feel can be readily used in the clinic. Make it user-friendly since your classmates will all receive copies as reference material. The use of simple diagrams and flow charts is encouraged. Briefly cover the etiology, symptoms, functional movement presentation, diagnosis, treatment options (surgical/nonsurgical), possible complications, precautions, prognosis, and the appropriate physical therapy intervention (physical therapy is the focus of this assignment, so emphasis should be on physical therapy relevance or implications). Not all areas may apply to all topics, so please ask if you have any questions. A minimum of 10 references (at least six coming from peer-reviewed journals) are required to support your paper. Most of these should be within the last 5 years. References must be listed IAW the current PT or JOSPT style. *IN ADDITION, you must include the key words and search strategy you used for finding this information. In particular, the start of your paper and presentation should look something like this:*

- DATABASE–CINAHL and MEDLINE, etc.
- SEARCH TERMS–spine, pain, rehabilitation, etc.

Be prepared to demonstrate your search strategy during the lecture portion of your presentation.

Oral assignment: Each group of students will have 20 minutes (15-minute presentation, 5 minutes for questions). All students should present a portion of the talk. The use of audiovisual aids is strongly encouraged. However, I am more interested in content, not fluff, a wowing presentation of bells and whistles does not make up for the lack of up-to-date data and relevant content. You should develop a Power Point® presentation on your laptop or home PC and load it on the classroom computer for presentation. Fifteen minutes will go quickly, so plan and practice your presentation carefully.

Sample Course Syllabus #2: Upper Extremity Course

Description: This course is designed to introduce the professional physical therapist to manual therapy techniques relevant to examination, evaluation, and management of upper- extremity pathology. The evidence for upper-extremity manual techniques will be presented and discussed. Techniques and clinical decision making rational for mobilization and thrust procedures will be presented, discussed, and taught. Extensive lab periods will focus on the hands-on evaluation, diagnosis, and selected manual treatment technique(s) using the impairment-based model. Concepts of regional interdependence will be discussed to include upper-quarter screening and the influence of the cervical and thoracic spine on upper-extremity pain and dysfunction. Exercise prescription and patient education will be taught as an adjunct to manual therapy techniques.

Objectives:

At the completion of this course the student will be able to:

1. Discuss the indications and contraindications to the application of nonthrust and thrust mobilization/manipulation techniques.
2. Discuss the evidence supporting manual therapy for the upper extremity.
3. Perform a thorough musculoskeletal exam, to include history and physical examination, of the upper quarter in order to screen for serious pathology.
4. Perform a thorough musculoskeletal examination on the shoulder, elbow, wrist, and hand, establish impairments and diagnosis, and recommend the proper manual techniques based on the impairment-based model.
5. Perform hands-on manual therapy techniques to address the specific impairments, to include specific technique for the joint impairment with grade I-V mobilization/manipulations.
6. Provide patient education and a home exercise program to specifically enhance the treatment technique.

Practical Instruction

Purpose

The purpose of this section is to provide sample instructional materials appropriate for use during laboratory instruction in nonthrust and thrust manipulation techniques. Faculty are encouraged to utilize all or parts of the samples provided (there are no copyright restrictions in place).

The techniques shown in the sample materials are appropriate for instruction in professional physical therapist degree programs. The techniques shown in this section are not, however, considered an inclusive compilation of techniques appropriate for instruction at this level, but rather examples of techniques and handouts appropriate for practical instruction. There are many references and resources available to academic faculty to support practical instruction (see Instructional Resource List) which faculty can use to supplement the sample material provided here.

Contents

- Sample Lab Handouts
- Sample Practical Examinations

Sample Lab Handout #1: Technique Instruction for Lumbar Spine Neutral “Gapping” Manipulation

Lumbar Spine Neutral “Gapping” Manipulation

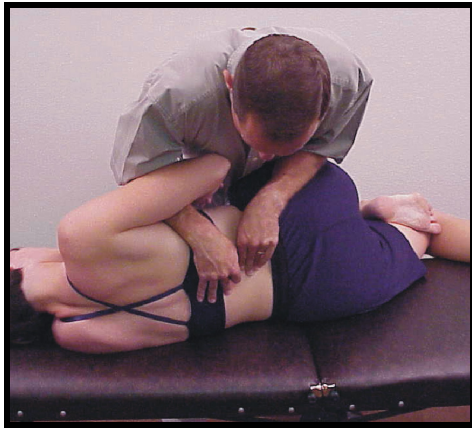
- Flex the top leg until you first begin to palpate at L4-L5 interspace; place the patient’s foot in the popliteal fossa as shown.
- Grasp the patient’s right arm and shoulder and induce right sidebending and left rotation until you begin to palpate motion at the L4-L5 interspace.
- Place your left thumb on the left side of the L4 SP and position the patient’s arms around your left arm.
- While maintaining your setup, log roll the patient towards you.
- While monitoring the right side of the L5 SP, use your right arm to induce a high- velocity, low amplitude (HVLA) thrust in an anterior direction.



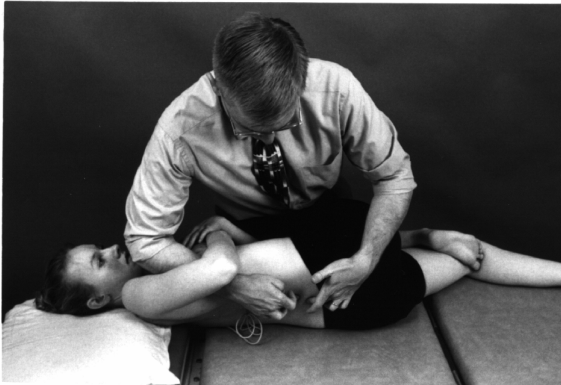
Sample Lab Handout #2: Technique Instruction for Gapping Left L4-L5 Lumbar Spine Flexion (Opening) Manipulation

Gap Left L4-L5 Lumbar Spine Flexion (Opening) Manipulation

- Flex the top leg until you first begin to palpate motion at L3-L4 motion segment; place the foot in the popliteal fossa as shown.
- Flex the upper body down until you begin to palpate motion at the L3-L4 motion segment.
- Rotate the upper trunk to the right until you begin to palpate motion at the L3-L4 motion segment.
- Place your right thumb on the right side of the L4 SP and position the patient's arms around your right arm.
- Log roll the patient towards you.
- While monitoring to the left of the L4 SP, use your left arm and body to induce Open Left L3-L4.



Sample Lab Handout #3: Technique Instruction for Sidelying Lumbar Rotation with locking Manipulation



Purpose: To manipulate a specific lumbar segment (L1-L2 through L5-S1) into rotation.

Patient position: Sidelying, facing the therapist.

Therapist position: Standing next to the patient.

Hand placement: Caudal hand: the pad of the long finger contacts the bottom side of the spinous process of the caudal member of the segment. Cranial hand: the pad of the long finger contacts the top side of the spinous process of the cranial member of the segment.

Sample Lab Handout #3 (Continued)

Procedure: Position the patient in left sidelying with the bottom leg in approximately 30 degrees of hip and knee flexion. Use the PIVM technique described previously to forward bend the lumbar spine up to the segment to be manipulated and then extend the hip and spine slightly. Once that point is reached, “hook” the top leg onto the bottom leg (eg, rest the top leg on the table so that the foot is resting behind the knee of the bottom leg). Switch the position of the hands, so that the pad of the third digit of the caudal hand is now palpating the interspinous space of the specified segment and the second digit is palpating one segment above. Rotate the spine to include the segment superior to the segment to be manipulated, but not to include the segment to be manipulated. Do this by pulling the patient’s bottom arm (from proximal to the elbow) in a forward and upward rotary motion with the cranial hand. Loosely fold the patient’s arms across the patient’s chest. Slide the cranial hand underneath the patient’s top arm and use the pad of the long finger to contact the top side of the spinous process of the cranial member of the segment. Use the pad of the long finger of the caudal hand to contact the bottom side of the spinous process of the caudal member of the segment. Use the cranial leg to step in towards the patient so that the caudal leg leaves the ground and the knee on the patient’s upper leg slides down the thigh of the caudal leg. Use the forearms (contacting the patient’s right anterior shoulder and chest and the right posterior hip and pelvis) to take up the slack and induce right rotation of the specified segment. Coordinate the manipulation with the patient’s breathing, progressively oscillating into more rotation each time. Repeat through approximately three breathing cycles. De-rotate the spine and retest forward bending of the specified segment. To manipulate a lumbar segment into left rotation, repeat the procedure with the patient positioned in right sidelying.

Notes: Indications for use of the right rotation manipulation technique are: decreased right rotation, decreased left sidebending, and/or decreased forward bending of a specific lumbar segment (L1-L2 through L5-S1). Indications for use of the left rotation manipulation technique are: decreased left rotation, decreased right sidebending, and/or decreased forward bending of a specific lumbar segment (L1-L2 through L5-S1). This is a vigorous patients with a minimal reactivity level. This technique is best performed as a progressive oscillation and combined with deep breathing for mechanical effects. It can also easily be modified as a high velocity thrust or an isometric manipulation. This technique may be contraindicated in patients with severe disc involvement or unstable spondylolisthesis.

Sample Lab Handout #4: Technique Instruction for Thoracic Supine Rotation Manipulation



Purpose: To manipulate a specific thoracic segment (T3-T4 through T11-T12) into rotation.

Patient position: Supine.

Therapist position: Standing next to the patient.

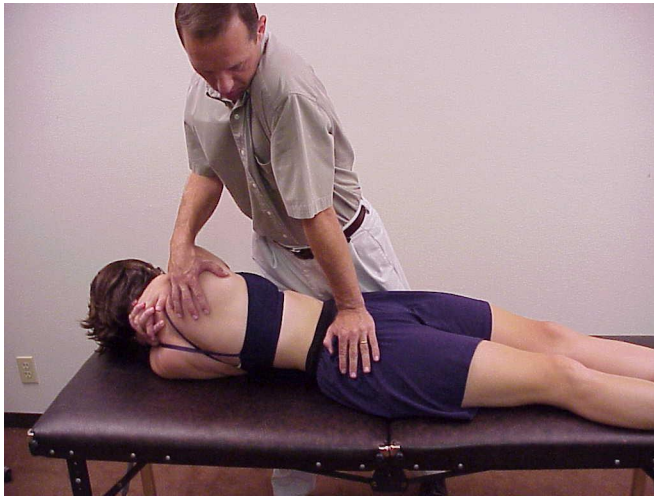
Hand placement: Caudal hand: Place thenar eminence on the transverse process of the caudal member of the segment. Place the dorsal aspect of the middle phalanx of the third digit on the transverse process of the cranial member of the segment. Cranial hand: Use hand and forearm to support the patient's upper body, head, and neck.

Procedure: Fold the patient's arms across the chest. The arm closest to the therapist should be crossed underneath. Standing on the patient's left side, use the cranial hand to reach under the patient's shoulders and support the upper body. Use the cranial hand to roll the patient slightly towards the left side and use the index finger of the caudal hand to palpate the specified segment. Once the segment is located, flex both the DIP and PIP joints of the long finger of the caudal hand. Place the dorsal aspect of the middle phalanx of the third digit on the left transverse process of the cranial member of the segment. Place the thenar eminence of the caudal hand on the right transverse process of the caudal member of the segment. Gently roll the patient back into the supine position onto the caudal hand. Use the chest to apply force through the patient's forearms to take up the slack and oscillate the segment. Coordinate the manipulation with the patient's breathing, progressively oscillating into slightly more rotation each time. Repeat through approximately three breathing cycles. Upon completion of the manipulation, retest right rotation.

To manipulate the segment into left rotation, stand on the patient's right side and repeat the procedure contacting the right transverse process of the cranial member of the segment and the left transverse process of the caudal member of the segment. Upon completion of the manipulation, retest left rotation.

Notes: Indication for use of this technique is decreased rotation of a specific thoracic segment (T3-T4 through T11-T12). The procedure can be performed using the cranial hand to contact the segment (using the same contact points described above). This modification prevents the therapist from reaching around the patient to perform the technique. Flex the long finger of the caudal hand (or cranial hand if using the modified technique) around a washcloth or pillowcase to protect the joints from hyperflexion. The procedure can be performed with the patient's arms folded across a pillow. This technique follows the rule of the lower finger, which states: The direction of the rotation is the same as the side of the lower finger (eg, if the lower finger is on the right side, right rotation is being induced). This technique is commonly used to induce a high-velocity thrust manipulation or as a progressive oscillation.

Sample Lab Handout #5: Technique Instruction for SI Region Manipulation



- Translate the pelvis towards you and maximally sidebend the patient's lower extremities and trunk to the right.
- Without losing the right sidebending, lift and rotate the trunk so the patient rests on their left shoulder.
- Contact the patient's right ASIS and lateral ilium using a broad comfortable contact with your left hand.
- Grasp the top shoulder and scapula with your right hand and rotate the trunk to the left while maintaining the right side-bending.
- Once the right ASIS starts to elevate perform a smooth high-velocity, low-amplitude thrust in an anterior to posterior direction.

Indications

Flynn and colleagues¹ found that subjects who had the following examination findings responded with success to this particular manipulation:

- a. Fear Avoidance Behavior Questionnaire work subscale score <18.
- b. Duration of symptoms 15 days or less.
- c. No symptoms distal to the knee.
- d. Lumbar spine hypomobility at any level.
- e. Either hip with greater than 35 degrees of internal rotation.

Successful response to the manipulation was defined by a 50% reduction in the Oswestry score in less than 5 days: Patients with 4 or more of these findings have a high likelihood of dramatic success. These subjects had severe LBP with Oswestry scores >30 but did not have significant sensory and/or motor loss. While the 4 or more findings predicted dramatic success, patients with fewer findings may respond more favorably than the passage of time. This clinical prediction rule has recently been validated by Childs using a different sample of patients and clinicians.²

References

1. Flynn T, Fritz J, Whitman J, Wainner R, et al. A clinical prediction rule for classifying patients with low back pain who demonstrate short-term improvement with spinal manipulation. *Spine*. 2002;27(24):2835-43.
2. Childs JD, Fritz JM, Piva SR, Erhard RE. Clinical decision making in the identification of patients likely to benefit from spinal manipulation: a traditional versus an evidence-based approach. *J Orthop Sports Phys Ther*. 2003;33(5):259-72.

Sample Practical Examinations

Recommendation

Students are asked to apply principles of biomechanics to safely perform the appropriate axial and/or appendicular manipulation technique (thrust and nonthrust) for a given case scenario. Inclusion of opportunities to assess the students' ability to make clinical decisions regarding the integration of manipulation techniques with other physical therapy interventions during practical examination is recommended.

Sample Practical Examination #1

Skilled Procedure: _____

- ___ Patient's body and extremity position
- ___ Therapist body mechanics
- ___ Therapist hand placement-manipulating hand
- ___ Therapist hand placement-stabilizing hand
- ___ Direction of forces
- ___ Intensity and velocity of forces applied by therapist
- ___ Correct technique performed for patient problem
- ___ Monitor patient's response to the procedure (pretest, posttest, feedback)
- ___ Documentation
- ___ Professionalism-projects professional image
- ___ Patient-Therapist Interaction: prepare patient and monitor response
- ___ Communication: clear and concise with appropriate terminology
- ___ Effective use of time and resources

Safety ___ Pass ___ Fail

Sample Practical Examination #2

Part 1: Clinical Knowledge and Decision Making (30 points)

- ___ Category Comments Points (5)
- ___ Chief Complaint and Symptom (5)
- ___ Behavior (5)
- ___ Visual Observation (5)
- ___ Differential Dx Considerations (5)
- ___ Expected STT Findings (5)

Part 2: Examination Technique (40 points)

- ___ Appropriate STT Selected (10)
- ___ Appropriate Special Tests Selected (10)

Demonstration (20)

- ___ Patient position (1)
- ___ PT position/ergonomics (1)
- ___ PT-patient communication (3)

- ___ Palpation Accuracy (3)
- ___ Palpation Technique (3)
- ___ Accurate Force Direction (3)
- ___ Force Amount and Control (3)
- ___ Accurate Interpretation (3)

Part 3: Intervention Technique (40 points)

- ___ Appropriate Technique Selection and Interpretation (10)

Technique Demo 1 (20)

- ___ PT Position (2)
- ___ Patient Position (2)
- ___ PT-Patient Communication (3)
- ___ Direction of Force (3)
- ___ Control and Amount of Force (3)
- ___ Appropriate Modification (3)
- ___ Follow-up Instructions (2)
- ___ Other Aspects of Technique (2)

Technique Demo 2 (30 points)

- ___ Grade 1-4 Oscillations (5)
- ___ Grade 1-3 Distraction (5)
- ___ Thrust (20-using criteria above)

Safety _____ Pass _____ Fail

Comments:

Sample Practical Examination #3

Practical Examination Grading Sheet

Case Study#: _____ **Examiner Name:** _____
Student PT: _____ **Date:** _____ **Examiner: (X/70)** **Total: (X/75)**
History: (X/10 Points)

Introduction Patient Profile Chief Complaint

Body Chart! Present History/Past History
 Aggravating/Easing Factors 24-Hour Behavior
 Special Red Flag Questions
 Questioning Adequate, Appropriate, Clear
 OSWESTRY SCORE; NDI; FABQ

Initial Hypothesis (X/5 Points)

Question the student on his or her working hypothesis and how he or she is planning the physical examination.

Physical Examination (X/25 Points)

Question student on the below. Scoring will be taking from the written note.

Diagnosis (X/2 Points) (*)From NOTE-Instructor Grades)**

Global and Segmental

Impairments (ie, flexion or extension limitations).

Structure(s) (ie, SI, lumbar, hip, and segmental level).

Prognosis (X/1 Points) (*)From NOTE-Instructor Grades)**

Problem List and Goals (**objective, measurable, time-related, realistic**)

Two (2) short-term and Two (2) long-term

Intervention (X/2 Total points for area) (*)From NOTE-Instructor Grades)****Specific Treatment Plan and Parameters as Applicable**

Exercise/Home Program (include active, passive, resistive; reps; frequency; specific names of exercises or direction of movements); Patient Education; Physical Agents; Referral; Manual Therapy.

Professional Demeanor _____ Pass _____ Fail

Safe Practice (Pass/Fail)

___ Failure to clear with neuromotor screen if warranted

___ Safety (failure to pick up red flags)

___ Proper therapist body mechanics

___ Proper positioning of patient during tests

The history and physical examination should be systematic in nature and avoid multiple changes in position. That is why we practiced the sequence of the physical examination. The overall quality and proficiency of the examination is taken into account on the scoring.

Manual Therapy and Exercise: Manipulation, Mobilization, or Muscle Energy Technique (X/20 Total points for area)

You are required to demonstrate with reasonable proficiency and using appropriate spinal mechanics at least four muscle energy or manipulation techniques. You will be given a movement restriction.

You will then set your partner up correctly and perform the technique.

1. Anterior Innominate/ SI Region Manipulation
2. Unilateral PA or Central PA Thoracic/Lumbar Mobilization
3. Flexion/Opening/Neutral Gapping Restriction Lumbar Manipulation
4. Extension Restriction Lumbar Manipulation
5. Flexion Restriction Thoracic (Supine) Manipulation
6. Extension Restriction Thoracic (Prone) Manipulation
7. Flexion Restriction Cervical MET or Mobilization
8. Extension Restriction Cervical MET or Mobilization
9. AA Restriction Upper Cervical MET or Mobilization
10. OA Flexion Restriction Upper Cervical MET or Mobilization

Exercise Instruction (X/10 Total points for area)

1. You are required to demonstrate with reasonable proficiency and using appropriate spinal mechanics at least two exercises to stretch or strengthen a particular muscle group. You will be given a movement weakness or restriction and then you will set your partner up correctly and perform the technique. (Figures and page numbers from: Greenman PE. *Principles of Manual Medicine*. 3rd ed. Philadelphia, Pa: Williams and Wilkins, 2003.)

1. Pelvic Clock (Minimum Tilt 6-12), Figure 20.11, p. 459
2. Piriformis Test Treatment, Figures 20.28-20.30, pp. 474-475
3. Postural Correction Sitting or Standing (neutral lumbar, correction of shoulder posture, chin tuck and neck alignment) Readings/Notes/Lab
4. Core Stabilization (TrA) Progression, Figures 20.39 and 20.40 (LABs), pp. 481-482
5. Extension Principle (Prone, Prone on Elbows, Prone Press-ups) “Centralization” Readings/Lectures
6. Cervical Flexor Muscles (Deep Neck), Figures 20.61, 20.62, and 20.63, pp. 500-502

+++ The practical examination standard for manual therapy and exercise is a moderate degree of proficiency performed in a safe manner. The examiners will be looking for the following:

- Correct planes of movement monitoring the correct area correct speed/amplitude.
- Correct hold-relax cycle clear instructions to patient.
- Confidence reassessment after treatment.

Sample Practical Examination #4: Midterm Spinal Examination

1. The patient is a 45-year-old male with complaints of right-sided cervical spine pain with radiation into the right occipital and ocular areas. The pain is provoked with right rotation and/or backward bending of the cervical spine. Patient denies numbness, tingling, or pain in the upper extremities.

Perform four passive intervertebral motion and muscle length assessments appropriate for this patient to determine impairments contributing to his spinal reports. Document the results.

2. A 36-year-old female reports right midthoracic area pain that is provoked with deep breathing and rotation of her thorax to the left. Pain is worse toward the end of the day, especially after working at her computer station at work. Pain is relieved with resting in a supported position.

Perform four passive intervertebral motion assessments and ergonomic workstation evaluation as appropriate for this patient. Document the results.

3. A 45-year-old male with a long history of lower back pain of gradually increasing frequency and gradually increasing severity reports a recent flair up of his condition that includes right lower back pain with radiation of pain down the back of the leg to the calf. The leg pain is provoked with sitting and driving.

Perform four examination procedures to determine the cause of this patient’s symptoms. Describe the measurement characteristics (sensitivity, specificity, and likelihood ratios) of two tests used in the evaluation of lumbar radiculopathy. Perform a passive intervertebral motion test at two levels. Document the results.

4. An 80-year-old female reports acute onset lower thoracic area pain that is now worse after being in the standing or sitting position for greater than 1 hour and relieved with side lying position. What additional diagnostic imaging study is likely warranted in this patient?
5. A 55-year-old male reports pain at the area of the right posterior lateral cervical spine and right posterior lateral aspect of the shoulder and upper arm to the elbow. Pain is provoked with computer work, yard work, and overhead reaching. Active cervical range of motion is 80% left rotation, 50% right rotation with provocation of pain, 80% forward bending, 80% right side-bending, and 50% left side-bending.

6. Describe the measurement characteristics (sensitivity, specificity, and likelihood ratios) of two tests used in the evaluation of cervical radiculopathy. Perform a passive intervertebral motion test at two levels. Document the results.

Sample Practical Examination #5: Final–Spinal Manipulation and Exercise

1. A 45-year-old male reports right-sided cervical spine pain with radiation into the right occipital and ocular area. Pain is provoked with right rotation and/or backward bending of the cervical spine. Patient denies numbness, tingling, or pain in the upper extremities.

Passive intervertebral motion assessments reveal moderate restriction with mild reactivity at the right C3-C4 facet joint for both upglide and downglide assessment.

Strength test reveals 4/5 strength anterior cervical muscles, cervical spine multifidus muscles, and bilateral lower trapezius.

Perform two manipulation techniques and instruct the patient in two home exercises appropriate for his condition. Demonstrate a thrust manipulation of the T6-T7 segment using the supine thoracic manipulation technique. Instruct in deep neck flexor strengthening program. Document the treatment.

2. A 36-year-old female complains of right midthoracic area pain that is provoked with deep breathing and rotation of the thorax to the left. Pain is worse toward the end of the day, especially after working at her computer station at work. Pain is relieved with resting in a supported position.

Passive intervertebral motion assessments reveal moderate limitation with mild reactivity with right rotation at the T5-T6 level and severe reactivity with minimal restriction with backward bending of T4-T5 level.

Strength test reveal 4/5 strength middle trapezius.

Length test reveal moderate tightness of pectoralis major muscle.

Conduct a work site ergonomic evaluation. Demonstrate a thrust manipulation of the T6-T7 segment using the supine thoracic manipulation technique. Instruct your patient in two home exercises appropriate for her problems. Document the treatment.

3. A 22-year-old college student strained his back playing basketball 4 weeks prior to initial examination. Pain is provoked with transition motions such as sit-to-stand and rolling over in bed. Pain is focused in the right midlumbar area and occasional right buttock area pain. Lumbar active range of motion is 50% forward bending with deviation to the right, 50% right rotation, 85% left rotation, 50% left sidebending, 80% right sidebending, 50% backward bending.

Passive intervertebral motion testing reveals moderate restriction with moderate reactivity of forward bending, right rotation, and left side-bending at the L3-L4 level. Hypermobility is noted at the L4-L5 level with minimal reactivity.

Strength testing reveals 3/5 multifidus and lower abdominal strength.

Perform two mobilizations and instruct the patient in two exercises appropriate for his condition. Document the treatment. Demonstrate a thrust manipulation of the right L3-L4 facet joint using the lumbar side-lying rotation manipulation technique.

4. A 22-year-old female presents with right-sided facial and jaw pain following a motor vehicle accident 4 weeks ago. Patient reports an increased pain with yawning and chewing and limited ability to fully open her mouth. Mandibular dynamics reveal a 25-mm opening with deviation to the right, 5-mm lateral excursion left, 10-mm lateral excursion right, 4-mm protrusion with deviation to the right. Accessory motion testing of the right TMJ reveals moderate limitation with moderate reactivity. Strength of the lateral and medial pterygoid muscles and tongue are 3/5 with poor endurance noted.

Perform two manipulation techniques and instruct the patient in two exercises appropriate for her condition. Document the treatment. Demonstrate a thrust manipulation of the T6-T7 segment using the supine thoracic manipulation technique.

5. A 75-year-old male with a 10-year history of back pain and stiffness reports bilateral leg pain that is brought on by walking up to 500 feet and is relieved with sitting. AROM lumbar spine reveals 50% of expected range in all planes of motion. Passive intervertebral motion testing reveals severe limitation with minimal reactivity with forward bending, right sidebending, and left rotation at L5-S1, L4-L5, and L3-L4 segments. Myofascial tightness is also noted at a moderate level of lumbar paraspinal tissues and moderate tightness is noted of the hip flexors (iliopsoas) and anterior hip capsule, bilaterally.

Conduct a two-stage treadmill test on this patient. Perform two mobilizations/manipulation techniques to the bilateral hip joints designed to address the above impairments. Perform an unweighted treadmill ambulation session and design a progressive weight-bearing program. Demonstrate a thrust manipulation of the right L3-L4 facet joint using the lumbar rotation manipulation technique. Document the treatment.

Instructional Resource List

Purpose

The purpose of this section is to provide a list of instructional resources for faculty members to use when designing and modifying curriculum. An exhaustive search was not performed to compile these resources; however, much of the current best evidence available related to manipulation in the peer-reviewed literature is provided. Key references as well as textbooks and educational CD-ROMs are identified. An evidence-based approach is of course recommended, and the information in this section is designed to assist faculty in compiling evidence based instructional resources. Faculty and students are encouraged to regularly visit the search engines listed to enhance and update this section.

Contents

- Search Engines
- Peer Reviewed Journal Articles
 - Spine-Related
 - Extremity-Related
 - Clinical Practice Guidelines
 - Additional References
- Non-Refereed Resources
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- APTA and AAOMPT Resources

Search Engines

www.apta.org/hookedonevidence

The American Physical Therapy Association Hooked on Evidence database is an APTA members-only Web site. It represents a "grassroots" effort to develop a database containing current research evidence on physical therapy interventions. The Hooked on Evidence project was motivated by a concern that clinicians lacked access to the knowledge available from current research, thus hindering evidence-based practice.

<http://www.ncbi.nlm.nih.gov/entrez>

MEDLINE is the National Library of Medicine's premier bibliographic database covering the fields of medicine, nursing, dentistry, veterinary medicine, the health care system, and the preclinical sciences. MEDLINE contains bibliographic citations and author abstracts from more than 4,000 biomedical journals published in the United States and 70 other countries.

www.pedro.fhs.usyd.edu.au/PEDro

PEDro is the Physiotherapy Evidence Database. It has been developed to give physiotherapists and others rapid access to bibliographic details and abstracts of randomized controlled trials and systematic reviews in physiotherapy. Most trials on the database have been rated for quality to help you quickly discriminate between trials that are likely to be valid and interpretable and those which are not.

<http://www.cochrane.org/index0.htm>

Cochrane Reviews are full-text articles reviewing the effects of healthcare. The reviews are highly structured and systematic, with evidence included or excluded on the basis of explicit quality criteria, to minimize bias. Data are often combined statistically (with meta-analysis) to increase the power of the findings of numerous studies, each too small to produce reliable results individually. Unfortunately, this is a fee-based system; however, the abstracts are freely available and you can request the articles from your facility's medical librarian.

Peer-Reviewed Journal Articles

Spine-Related Articles

1. Abenhaim L, Rossignol M, Gobeille D, et al. The prognostic consequences in the making of the initial medical diagnosis of work-related back injuries. *Spine*. 1995;20:791-795.
2. Aker PD, Gross AR, Goldsmith CH, et al. Conservative management of mechanical neck pain: systematic overview and meta-analysis [see comments]. *BMJ*. 1996;313:1291-1296.
3. Armstrong MP, McDonough S, Baxter GD. Clinical guidelines versus clinical practice in the management of low back pain. *Int J Clin Pract*. 2003;57:9-13.
4. Childs J, Fritz J, Flynn T, et al. Which patients with low back pain benefit from spinal manipulation? Validation of a clinical prediction rule. *Ann Intern Med*. 2003;Submitted.
5. Childs JD, Fritz JM, Piva SR, et al. Clinical decision making in the identification of patients likely to benefit from spinal manipulation: a traditional versus an evidence-based approach. *J Orthop Sports Phys Ther*. 2003;33:259-272.
6. Connolly BH, Lupinnaci NS, Bush AJ. Changes in attitudes and perceptions about research in physical therapy among professional physical therapist students and new graduates. *Phys Ther*. 2001;81:1127-1134.
7. Davis DA, Taylor-Vaisey A. Translating guidelines into practice. A systematic review of theoretic concepts, practical experience and research evidence in the adoption of clinical practice guidelines. *Cmaj*. 1997;157:408-416.
8. Delitto A, Cibulka MT, Erhard RE, et al. Evidence for an extension/mobilization category in acute low back syndrome. *Phys Ther*. 1993;73:216-228.
9. Dreyfuss P, Tibiletti C, Dreyer S. Thoracic zygapophyseal joint pain patterns: a study in normal volunteers. *Spine*. 1994;19:807-811.
10. Erhard R, Delitto A, Cibulka M. Relative effectiveness of an extension program and a combined program of manipulation and flexion and extension exercises in patients with acute low back syndrome. *Phys Ther*. 1994;74:1093-1100.
11. Flynn T, Fritz J, Whitman J, et al. A clinical prediction rule for classifying patients with low back pain who demonstrate short-term improvement with spinal manipulation. *Spine*. 2002;27:2835-2843.
12. Flynn TW, Fritz JM, Wainner RS, et al. The audible pop is not necessary for successful spinal high-velocity thrust manipulation in individuals with low back pain. *Arch Phys Med Rehabil*. 2003;84:1057-1060.
13. Fritz JM, George S. The use of a classification approach to identify subgroups of patients with acute low back pain. Interrater reliability and short-term treatment outcomes. *Spine*. 2000;25:106-114.
14. Fritz JM, Wainner RS. Examining diagnostic tests: an evidence-based perspective. *Phys Ther*. 2001;81:1546-1564.
15. Gracey J, McDonough S, Baxter G. Physiotherapy management of low back pain: A survey of current practice in Northern Ireland. *Spine*. 2002;27:406-411.
16. Hides JA, Jull GA, Richardson CA. Long-term effects of specific stabilizing exercises for first-episode low back pain. *Spine*. 2001;26:E243-E248.
17. Hoving JL, Koes BW, de Vet HC, et al. Manual therapy, physical therapy, or continued care by a general practitioner for patients with neck pain. A randomized, controlled trial.[comment][summary for patients in *Ann Intern Med*. 2002 May 21;136(10):I36; PMID: 12020157]. *Ann Intern Med*. 2002;136:713-722.
18. Hurwitz EL, Aker PD, Adams AH, et al. Manipulation and mobilization of the cervical spine. A systematic review of the literature [see comments]. *Spine*. 1996;21:1746-1759; discussion 1759-1760.
19. Jackson D. How is low back pain managed? Retrospective study of the first 200 patients with low back pain referred to a newly established community-based physiotherapy department. *Physiotherapy*. 2001;87:573-581.

20. Jette A, Dellitto A. Physical therapy treatment choices for musculoskeletal impairments. *Phys Ther.* 1997;77:145-154.
21. Jette DU, Jette AM. Physical therapy and health outcomes in patients with spinal impairments. *Phys Ther.* 1996;76:930-941; discussion 942-5.
22. Koes BW, van Tulder MW, Ostelo R, et al. Clinical guidelines for the management of low back pain in primary care: an international comparison. *Spine.* 2001;26:2504-2513; discussion 2513-2514.
23. Korthals-de Bos IB, Hoving JL, van Tulder MW, et al. Cost effectiveness of physiotherapy, manual therapy, and general practitioner care for neck pain: economic evaluation alongside a randomized controlled trial.[comment]. *BMJ.* 2003;326:911.
24. Li LC, Bombardier C. Physical therapy management of low back pain: an exploratory survey of therapist approaches. *Phys Ther.* 2001;81:1018-1028.
25. Rasmussen G. Manipulation in treatment of low-back pain: a randomized clinical trial. *Manual Med.* 1979;1:8-10.
26. Riddle DL, Freburger JK. Evaluation of the presence of sacroiliac joint region dysfunction using a combination of tests: a multicenter intertester reliability study. *Phys Ther.* 2002;82:772-781.
27. Schiller L. Effectiveness of spinal manipulative therapy in the treatment of mechanical thoracic spine pain: a pilot randomized clinical trial. *J Manipulative Physiol Ther.* 2001;24:394-401.
28. Shekelle PG, Coulter I. Cervical spine manipulation: summary report of a systematic review of the literature and a multidisciplinary expert panel. *J Spinal Disord.* 1997;10:223-228.
29. Streder LE, Sjøblom A, Sundell K, et al. Interexaminer reliability in physical examination of patients with low back pain. *Spine.* 1997;22:814-820.
30. Suter E, McMorland G. Decrease in elbow flexor inhibition after cervical spine manipulation in patients with chronic neck pain. *Clin Biomech.* 2002;17:541-544.
31. Turner P, Whitfield T. Physiotherapists' reasons for selection of treatment techniques: a cross-national survey. *Physiother Theory Pract.* 1999;15:235-246.
32. van Tulder MW, Koes BW, Bouter LM. Conservative treatment of acute and chronic nonspecific low back pain. A systematic review of randomized controlled trials of the most common interventions [see comments]. *Spine.* 1997;22:2128-2156.
33. Waddell G. 1987 Volvo award in clinical sciences. A new clinical model for the treatment of low-back pain. *Spine.* 1987;12:632-644.
34. Waddell G. Low back pain: a twentieth century health care enigma. *Spine.* 1996;21:2820-2825.
35. Waddell G, Somerville D, Henderson I, et al. Objective clinical evaluation of physical impairment in chronic low back pain. *Spine.* 1992;17:617-628.
36. Whitman JM, Flynn TW, Fritz JM. Nonsurgical management of patients with lumbar spinal stenosis: a literature review and a case series of three patients managed with physical therapy. *Phys Med Rehabil Clin North Am.* 2003;14:77-101, vi-vii.
37. Wreje U, Nordgren B, Aberg H. Treatment of pelvic joint dysfunction in primary care: a controlled study. *Scand J Prim Care.* 1992;10:310-315.

Extremity-Related Articles

1. Abbott JH. Mobilization with movement applied to the elbow affects shoulder range of movement in subjects with lateral epicondylalgia. *Manual Ther.* 2001;6:170-177.
2. Abbott JH, Patla CE, Jensen RH. The initial effects of an elbow mobilization with movement technique on grip strength in subjects with lateral epicondylalgia. *Manual Ther.* 2001;6:163-169.
3. Bang MD, Deyle GD. Comparison of supervised exercise with and without manual physical therapy for patients with shoulder impingement syndrome. *J Orthop Sports Phys Ther.* 2000;30:126-137.
4. Cibulka M, Delitto A. A comparison of two different methods to treat hip pain in runners. *J Orthop Sports Phys Ther.* 1993;17:172-176.
5. Desmeules F, Cote CH, Fremont P. Therapeutic exercise and orthopedic manual therapy for impingement syndrome: a systematic review. *Clin J Sport Med.* 2003;13:176-182.

6. Deyle G, Henderson N, Matekel F, et al. Effectiveness of manual physical therapy and exercise in osteoarthritis of the knee—a randomized, controlled trial. *Ann Int Med.* 2000;132:173-181.
7. Green S, Buchbinder R, Hetrick S. Physiotherapy interventions for shoulder pain. Cochrane Database of Systematic Reviews. 2003;3.
8. Green T, Refshauge K, Crosbie J, et al. A randomized controlled trial of a passive accessory joint mobilization on acute ankle inversion sprains. *Phys Ther.* 2001;81:984-994.
9. Hay EM, Thomas E, Paterson SM, et al. A pragmatic randomised controlled trial of local corticosteroid injection and physiotherapy for the treatment of new episodes of unilateral shoulder pain in primary care. *Ann Rheum Dis.* 2003;62:394-399.
10. O'Connor D, Marshall S, Massy-Westropp N. Non-surgical treatment (other than steroid injection) for carpal tunnel syndrome. Cochrane Database of Systematic Reviews. 2003;3.
11. Vicenzino B, Collins D, Wright A. The initial effects of a cervical spine manipulative physiotherapy treatment on the pain and dysfunction of lateral epicondylalgia. *Pain.* 1996;68:69-74.
12. Vicenzino B, Paungmali A, Buratowski S, et al. Specific manipulative therapy treatment for chronic lateral epicondylalgia produces uniquely characteristic hypoalgesia. *Manual Ther.* 2001;6:205-212.
13. Wilson F. Manual therapy versus traditional exercises in mobilisation of the ankle post-ankle fracture: a pilot study. *N Z J Physiotherapy.* 1991:11-16.

Clinical Practice Guidelines

1. Bigos S, Bowyer O, et al. *Acute Low Back Problem in Adults.* Clinical Practice Guideline No. 14. Rockville, Md: Agency for Health Care Policy and Research, Public Health Services; 1994.
2. Evidence-Based Clinical Practice Guideline Working Group, V D. *Low Back Pain or Sciatica in the Primary Care Setting.* In: *Office of Quality and Performance Publication 10Q-CPG/LBP-99.* Veterans Health Administration and Health Affairs, Department of Defense; 1999.
3. Group, N Z G. *New Zealand Acute Low Back Pain Guide.* Wellington, NZ; 1997.
4. Waddell G, McIntosh A, et al. *Low Back Pain Evidence Review.* London, UK, Royal College of General Practitioners; 1999.

Additional Resources

1. Cibulka MT. How to use evidence-based practice to distinguish between three different patients with low back pain. *JOSPT.* 2001;31(12):78-695.
2. DiFabio RP. Manipulation in the cervical spine: risks and benefits. *Phys Ther.* 1999; 79(1):0-65.
3. Donelson R, April C, Medcalf R, Grant W. A prospective study of centralization of lumbar and referred pain. A predictor of symptomatic discs and annular competence. *Spine.* 1997;22(10):1115-1122.
4. Donatelli R, Owens-Burkhart H. Effects of immobilization on the extensibility of periarticular connective tissue. *JOSPT.* 1981;(3):67.
5. Erhard RE, Delitto A, Cibulka MT. Relative effectiveness of an extension program and a combined program of manipulation and flexion and extension exercises in patients with acute low back syndrome. *Phys Ther.* 1994;74(12):1093-1100.
6. Haldeman S. Spinal manipulative therapy: a status report. *Clin Orthop Related Res.* 1883;179:62-70.
7. Johnson D, Rogers M. Letter to the editor: spinal manipulation. *Phys Ther.* 2000;80 (8):820-823.
8. Kilby J, Stigant M, Roberts A. The reliability of back pain assessment by physiotherapists, using a McKenzie algorithm. *Physiotherapy.* 1990;76(9):579-583.
9. Meadows J. The sharp-purser test: a useful clinical tool or an exercise in futility and risk? *J Manual Manipulative Ther.* 1998;6(2):97-99.
10. Paris SV. Physical therapy approach to facet, disc, and sacroiliac syndromes of the lumbar spine. In: White AH, Anderson R. *Conservative Care of Low Back Pain.* Williams and Wilkins, Baltimore. 1990.

11. Olson KA, Joder D. Diagnosis and treatment of cervical spine clinical instability. *JOSPT*. 2001;31(4):194-206.
12. Paris SV. Physical signs of instability. *Spine*. 1985;10(3):277-279.
13. Paris SV. Spinal manipulative therapy. *Clin Orthop Related Res*. 1983;179:55-61.
14. Laslet M. Use of manipulative therapy for mechanical pain of spinal origin. *Orthop Rev*. 1987;16(8):573-581.
15. Creighton DS. Positional distraction, a radiographic confirmation. *J Manual Manipulative Ther*. 1993;1(3):83-86.
16. O'Sullivan PB. Lumbar segmental 'instability': clinical presentation and specific stabilizing exercise management. *Manual Ther*. 2000;5(1):2-12.
17. Unsworth A, Dowson D, Wright V. Cracking joints. *Ann Rheum Dis*. 1971;30:348-358.
18. van Tulder WM, Koes BW, Bouter LM. Conservative treatment of acute and chronic nonspecific low back pain: a systemic review of randomized controlled trials of the most common interventions. *Spine*. 1997;22(18):2128-2156.
19. Viti JA, Paris SV. Use of upper thoracic manipulation in a patient with headache. *J Manual Manipulative Ther*. 2000;8(1):25-28.

Non-Refereed Material

Textbooks

2. Brotzman S, Brent, Wilk K *Clinical Orthopaedic Rehabilitation*. 2nd ed. Mosby; 2003.
3. Magee DJ. *Orthopedic Physical Assessment*. 4th ed. Philadelphia, Pa: W.B. Saunders Company; 2002.
4. Hertling D, Kessler RM. *Management of Common Musculoskeletal Disorders*. 3rd ed. Philadelphia, Pa: Lippincott; 1996.
5. Saunders HD, Saunders R. *Evaluation, Treatment, and Prevention of Musculoskeletal Disorders, 3rd ed., volume one—Spine*. Bloomington, Minn: Educational Opportunities; 1993.
6. Greenman PE. *Principles of Manual Medicine*. 3rd ed. Philadelphia, Pa: Williams and Wilkins; 2003.
7. Bourdillon JF, Day EA, Bookhout MR. *Bourdillon's Spinal Manipulation*. 6th ed. Boston: Butterworth-Heinemann; 2001.
8. Maitland G, Banks, English, Hengeveld. *Vertebral Manipulation*. 6th ed. Elsevier; 2000.
9. Waddell G. *The Back Pain Revolution*. New York: Churchill-Livingstone; 1998.
10. Winkel D, Aufdemkampe M, Meijer, Phelps. *Diagnosis and Treatment of the Spine: Nonoperative Orthopaedic Medicine and Manual Therapy*. Gaithersburg, Md: Aspen Publishers; 1996.
11. Kaltenborn F. *Manual Mobilization of the Joints—The Spine*. Minneapolis, MN: OPTP; 1999.
12. McKenzie R. *The Lumbar Spine: Mechanical Diagnosis and Therapy*. 2nd ed. Waikanae, New Zealand: Spinal Publications Limited; 2002.
13. Guyatt G, Cook D, Devereaux P, et al. *Users' Guides to the Medical Literature—A Manual for Evidence-Based Clinical Practice*. Chicago: AMA Press; 2002.

Electronic Textbooks

1. Manipulation Demonstration CD_ROM. Tallahassee, FL: AAOMPT, 2002.
2. Flynn T, Whitman J, Magel J. *Orthopaedic Manual Physical Therapy Management of the Cervical-Thoracic Spine and Ribcage*. Fort Collins, Colo: Manipulations Inc; 2000.
3. Gibbons P, Tehan P. *Manipulation of the Spine, Thorax and Pelvis: An Osteopathic Perspective*. New York: Churchill-Livingstone; 2001.
4. Wainner R, Flynn T, Whitman J. *Spinal and Extremity Manipulation—The Basic Skill Set for*

Physical Therapists. Fort Collins, Colo: Manipulations Inc; 2001.

5. Whitman J, Flynn T, Wainner R, Magel J. *Orthopaedic Manual Physical Therapy Management of the Lumbar Spine, Pelvis, and Hip Region*. Fort Collins, Colo: Manipulations Inc; 2002.

Course Notes

1. Paris SV, Patla C. E1 Course Notes Extremity Dysfunction and Manipulation. Institute of Physical Therapy, St Augustine, Florida. 1988.
2. Paris SV, Loubert P. Foundations of Clinical Orthopaedics. Institute of Physical Therapy, St Augustine, Florida. 1990.
3. Paris SV. Introduction to Spinal Evaluation and Manipulation, S1 Course Notes. Institute Press, St Augustine, Florida. 1990.

APTA and AAOMPT Resources

1. Physical Therapist Clinical Performance Instrument. Alexandria, Va: American Physical Therapy Association; 1998.
2. Guide to Physical Therapist Practice. 2nd ed. *Phys Ther*. 2001;81.
3. Description of Advanced Clinical Practice, Orthopaedic Manual Physical Therapy, AAOMPT.
4. ABPTS. Description of Specialist Practice, Orthopedic Physical Therapy, Alexandria, Va: American Physical Therapy Association; 2002.
5. APTA Clinical Residency Guidelines.
6. *A Normative Model of Physical Therapist Professional Education: Version 2004*. Alexandria, Va: American Physical Therapy Association; 2004.
7. *Governmental Affairs Manipulation Action Packet*. American Physical Therapy Association; 2004.
8. Commission on Accreditation in Physical Therapy Education. Evaluative Criteria for Accreditation of Education Programs for the Preparation of Physical Therapists. Alexandria, Va: American Physical Therapy Association, 1998.
9. *Manual Manipulative Therapy: A Compendium for Physical Therapists Regarding Practice and Legislative Issues*. LaCrosse, Wis: Orthopaedic Section, American Physical Therapy Association; 2001.

Faculty and Clinical Instructors

Recommended Qualifications

Recommended Qualifications for Academic Faculty

Qualifications of instructors responsible for the cognitive and psychomotor content in professional physical therapist curricula are described below. These are recommended qualifications, which academic programs can utilize when planning faculty development processes and resources.

1. Faculty actively engages in clinical practice within the area of their expertise and instruction.
2. Faculty possesses teaching experience that preferably includes mentoring or formal training in educational processes and methods.
3. Faculty utilizes and applies evidence-based concepts within both clinical practice and teaching.

In addition, it is desirable and preferred that faculty be trained and examined in didactic (OCS can fulfill this requirement) and psychomotor areas of manual therapy, including thrust techniques, or the equivalency. Completion of Clinical Residency and Fellowship programs in manual therapy, certification in manual therapy, fellow status in AAOMPT, and ABPTS Orthopedic Certified Specialist are all appropriate avenues and credentials for faculty with responsibilities in this area to pursue. In addition, individuals with extensive experience and self-study without formal training and examination may also be well qualified for instructional responsibilities in manipulation.

In addition to the above preferred qualifications, it is also expected that faculty from accredited physical therapist programs meet required qualifications for academic faculty including, but not limited to, postprofessional degrees and active engagement in or a record of scholarly activity (as defined by CAPTE) that contributes to the professional body of knowledge.

Recommended Qualifications for Professional Clinical Instructors

The recommended qualifications of clinical instructors to mentor professional physical therapist students in manual therapy principles/techniques, within the clinical environment, are as follows:

1. Clinical instructors are actively engaged in clinical practice within the area of clinical expertise and instruction. Applications of manual therapy/manipulation principles/techniques are performed as a routine component of clinical practice.
2. Experience and/or training in the area of clinical teaching and mentoring is preferred.
3. Clinical instructors utilize and apply evidence-based concepts within their clinical practice.

In addition, it is desirable for clinical instructors to receive training in cognitive and psychomotor principles/techniques of manual therapy and clinical instruction. Pursuit of training in manipulation and education methods is appropriate professional development activities for clinical instructors. The APTA Clinical Instructor Education and Credentialing program, as well as approved APTA clinical residency and fellowship programs and other types of training that lead to manual therapy certification and/or fellowship in the AAOMPT, are desirable qualifications for clinical faculty.

Professional Development

The following is a list of suggested methods and/or mechanisms that faculty and clinical instructors may pursue to prepare them to teach and remain current in the manual therapy component of the professional physical therapist curriculum.

1. Enter a formal APTA-credentialed orthopedic physical therapy residency and/or an APTA-credentialed manual therapy fellowship. The residency/fellowship may be completed as a component of the individual's clinical requirement, or when an available sabbatical may be indicated.
2. Participate in membership within the AAOMPT, APTA's Orthopaedic Section, and/or APTA's Education Section. Membership in these groups offer individual professional development opportunities (ie, educational, networking, etc). The AAOMPT offers the opportunity to sit for a challenge examination, which when passed, grants the individual fellow status within the AAOMPT. The preparation process leading up to the exam, which includes the development of a professional portfolio, is an excellent method to attain professional development.
3. The APTA Education Section has offered a development course for new faculty and faculty at other levels of experience, which serves as an excellent mechanism to promote faculty development in the area of educational process and methods.
4. Physical therapist education programs can request that their institution sponsor educational classes/courses and/or workshops to improve the core/adjunct faculty members and clinical instructors teaching/mentoring ability.
5. Physical therapist education programs can cosponsor manual therapy CEU courses to assist the core/adjunct faculty and clinical instructors to improve their didactic knowledge and psychomotor skill level.
6. APTA offers professional development courses for clinical instructors that may lead to an individual becoming a Credentialed Clinical Instructor. This will be an extremely valuable asset for those functioning as clinical mentors.
7. APTA is currently offering advanced clinical practice CEU courses, which assists individuals to obtain further knowledge within the area of orthopedic manual physical therapy.
8. The pursuit of a postprofessional degree will assist an individual with professional development, particularly if the degree is in the area of orthopedic manual physical therapy or other related area of study.
9. Pursuit of the OCS will also be valuable for professional development. Similar to the AAOMPT challenge exam, it is not the test itself that provides the professional development, but rather the preparation process to sit for the exam, which provides the beneficial learning experience.

Current programming at professional conferences such as the APTA's Combined Section Meeting, APTA's Annual Conference, and the AAOMPT's Annual Conference provide valuable training in the area of orthopedic manual physical therapy. Programming specifically developed to assist faculty and CIs in the development of teaching and/or mentoring skill in manual therapy are offered by AAOMPT and often presented in conjunction with APTA and the Orthopaedic Section.

Locating Qualified Faculty and Clinical Instructors

Physical therapist programs interested in locating new faculty or clinical instructors with background and training related to manual therapy and manipulation may wish to contact the following:

AAOMPT, for a list of Fellows (there are more than 300). In addition, a list of residency and fellowship programs recognized by AAOMPT is available through the AAOMPT office. Residency programs jointly recognized by the AAOMPT and APTA can be located by contacting either AAOMPT or APTA (www.apta.org/Education/clinical/apta_crtdt_clncl_rdncl).

APTA, which recognizes clinical residency and fellowship programs in orthopedic physical therapy, in addition to the programs in orthopedic manual physical therapy jointly recognized by AAOMPT and APTA. Individual residency programs often provide lists of graduates and faculty by geographic regions to schools or clinicians interested in identifying individuals with expertise in manipulation, either for clinical consultation or teaching.

ABPTS, which may be contacted for lists of individuals board certified in orthopedic physical therapy in particular geographic areas (www.apta.org/Education/specialist/dir_cert_cln_pt-85-97).

In addition, programs attempting to identify new faculty or clinical instructors may also wish to contact individual members of the committees listed in the contact list who are located in or near their geographic area for assistance in locating appropriately qualified individuals. The Contact List at the end of this manual provides the Internet address, mailing addresses, and telephone information for the organizations and individuals mentioned above.

Contact List

This section includes a resource/contact list for physical therapists searching for information to assist with the development and implementation of curricula and courses covering manipulation. Organizations and individuals are listed that can be utilized to answer questions, gain guidance, and/or other forms of assistance.

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